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The ECS Chapters of Excellence Awards went to the **ECS University of Washington Student Chapter** and the **ECS Munich Student Chapter**, which consists of students from the Technical University of Munich and Munich University of Applied Sciences.

The Outstanding Student Chapter Award went to the **ECS University of Maryland Student Chapter**.



ECS University of Washington Student Chapter (left to right): **MATT MURBACH**, **JOHNA LEDDY**, ECS president, **YANBO QI**, **JERRY CHEN**, and **ROBERT MASSE**.



ECS Munich Student Chapter (left to right): **GREGOR HARZER**, chapter secretary, **JOHNA LEDDY**, ECS president, and **MORTEN WETJEN**, chapter treasurer.



ECS University of Maryland Student Chapter (left to right): **STEVEN LACEY**, past chapter president, **JOHNA LEDDY**, ECS president, **ERIC WACHSMAN**, chapter advisor, and **PATRICK OWEN STANLEY**, current chapter president.

There were 12 division and section awards:

- Battery Division Technology Award was presented to **Yang-Kook Sun** of Hanyang University.
- Battery Division Technology Award was presented to **Jun Liu** of Pacific Northwest National Laboratory.
- Battery Division Research Award was presented to **Ryoji Kanno** of Tokyo Institute of Technology.
- Battery Division Postdoctoral Associate Research Award, sponsored by MTI Corporation and the Jiang Family Foundation, was presented to **Haegyeom Kim** of Lawrence Berkeley National Laboratory.
- Battery Division Postdoctoral Associate Research Award, sponsored by MTI Corporation and the Jiang Family Foundation, was presented to **Kimberly See** of the University of Illinois at Urbana-Champaign.
- Battery Division Student Research Award was presented to **Lin Ma** of Dalhousie University.
- Corrosion Division H. H. Uhlig Award was presented to **Herman Terryn** of Vrije Universiteit Brussel.
- Corrosion Division Morris Cohen Graduate Student Award was presented to **Mohsen Esmaily** of Chalmers University of Technology.
- Electrodeposition Division Research Award was presented to **Stanko Brankovic** of the University of Houston.
- Electrodeposition Division Early Career Investigator Award was presented to **Jiahua Zhu** of the University of Akron.
- High Temperature Materials Division J. Bruce Wagner, Jr. Award was presented to **Cortney Kreller** of Los Alamos National Laboratory.
- Europe Section Heinz Gerischer Award was presented to **Kazuhiro Hashimoto** of the University of Tokyo.

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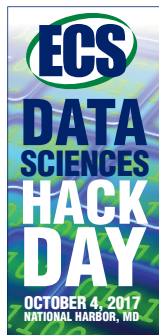


ECS Battery Division Chair **CHRISTOPHER JOHNSON** (right) presented **YANG-KOOK SUN** (left) with the Battery Division Technology Award.



ECS Battery Division Chair **CHRISTOPHER JOHNSON** (right) presented **JUN LIU** (left) with the Battery Division Technology Award.

Successful First ECS Data Sciences Hack Day



The ECS Data Sciences Hack Day held in National Harbor was the Society's first foray into building a data sciences and open source community for electrochemistry and solid state science from the ground up. Dataset sharing and open source software have transformed many big data areas such as astronomy, particle physics, synchrotron science, protein and genomic sciences, as well as computational sciences. There is a fast-growing demand for turning big data into actionable information.

Data science is concerned with four very relatively specific areas: visualization, data management, statistics, and machine learning. Data science tools and approaches also have the potential to transform bench science like electrochemistry. There is a critical need to build a community of data scientists in our field with people who can grow a library of shared experimental and computational datasets and who develop and adapt open source software tools.

The day-long program was run by **Daniel Schwartz**, **David Beck**, and **Matthew Murbach**. Schwartz is the Boeing-Sutter Professor of Chemical Engineering and director of the Clean Energy Institute at the **University of Washington**; he brings electrochemistry and modeling expertise to the team. Beck is a senior data scientist with the eSciences Institute at the University of Washington and leads regular hackathons; he is associate director of the NSF Data Intensive Research Enabling CleanTech PhD training program. Murbach is president of the ECS University of Washington Student Chapter and an advanced data sciences PhD trainee; he has been leading the student section software development sessions on the University of Washington campus and has practical experience coaching electrochemistry scientists and engineers in software development.

These three spoke passionately about data sciences in an ECS podcast (www.electrochem.org/redcat-blog/open-science-ecs). David Beck noted that science is not "artisanal"; it's about scientists working in teams.

"Having software be open, having data be open, really enables that team effort and allows checks and balances and assurances of reproducibility," Beck said.

Matt Murbach added, "I think it's going to be grad students pushing their advisors to think about: 'Let's publish this data set with this manuscript.' 'Let's publish our software on GitHub.' And I think that can start to be the cultural change that comes from the excitement of my peers."

The 30 participants in the hack day traveled from around the globe and represented varying stages of careers in both academic and industry roles. The day-long event was kicked off with a short series of informational sessions covering some of the essential tools in any data scientist's toolbox. During lunch, participants pitched their ideas for projects, and teams for the afternoon session organically formed

around common interests. The remaining time during the afternoon was reserved as open hacking time for working on the project ideas. Good progress was made by teams working on a wide variety of projects, including:

- open source software for the analysis of X-ray Photoelectron Spectroscopy (XPS) spectra
- writing genetic algorithms to search for molecular structures with RDKit
- using machine learning to predict battery degradation
- building tools for easily accessing and analyzing open battery prognostics data
- open standards for metadata and the sharing of experimental electrochemical data

In addition to the projects and scientific discussions, the professional connections made during and after the hack day are vital for laying the groundwork of a growing community of electrochemical data scientists.

Outputs from the hack day are organized on an OSF project page (DOI: 10.17605/OSF.IO/Z4XKN), providing a persistent source for information and a lasting legacy of the inaugural event. Schwartz pointed out that funders, like the National Science Foundation, have changed what they are looking for in the supporting materials for a grant.

He explained that, in 2013, "they went from, 'give us your five most significant publications and your five most relevant publications,' to 'give us your five most significant research products.'" So the outputs from data science activities, like the hack day, will also provide participants valuable additions to their résumés.

As with many experimental programs, this one could not have happened without the support of sponsors. The sponsors of the first ECS Data Sciences Hack Day—the University of Washington Clean Energy Institute, the University of Washington eScience Institute, and the U.S. Army Research Office—provided funding for many of the participants to travel to the event.

Not only was the hack day an achievement in and of itself, but it marks the start of ECS maintaining and openly disseminating high-quality curated data, software, and other data science tools that will help push forward the open science vision of ECS's *Free the Science* initiative.

The success in National Harbor has everyone excited for the next opportunity at the ECS meeting in Seattle, Washington in spring 2018. Be sure to sign up for the ECS weekly newsletter (www.electrochem.org/enews) to learn more about opportunities for contributing project ideas and submitting your application for the next ECS Data Sciences Hack Day. ■



DANIEL SCHWARTZ



MATTHEW MURBACH



DAVID BECK